REMARKS

Claims 17-36 remain in this application.

The examiner objected to the language of claims 35 and 36, saying that "the fine machining" did not have sufficient antecedent basis in the claim. Accordingly, the word "the" has been eliminated from this phrase.

It is believed that the combination of references applied by the examiner in his prior art rejection does not teach or suggest the claimed invention for at least the following four reasons:

1. The Takenaka et al disclosure is directed towards sliding seals such as found in rotary devices, valve guides and bearings as described by Takenaka et al at col. 5, lines 14-19. These devices have different structures and motion characteristics than a fuel injection valve. Moreover, claim 17 recites that the microscopic indentations are formed on the sealing face 7 of the valve needle, and/or on the valve seat 9. Thus in applicants' invention, the microscopic indentations are part of the seal that is formed to keep fuel which is under pressure in chamber 19 from escaping through openings 11 when the valve needle is in its closed, or sealed position. When in the closed position, there is absolutely no movement between applicants' structure, seat 9 and valve needle surface 7. When in the closed position, these surfaces are forced together by the closing force of the injection valve as mentioned in paragraph 4 and elsewhere in the specification. The shape of conical seat 9 and substantially mating conical surface 7, plus the force with which they are moved together and held closed, do not permit for any relative movement between these surfaces once the valve is closed.

In contrast to this, in Takenaka et al, in every one of the listed environments, see Takenaka et al at column 1 line 8, column 4 line 53, and column 5 lines 14-23, the micropores

are used to help lubricate parts which are continuously moving with respect to each other. In Takenaka et al the micropores are never used to help close a valve structure.

Thus, the structure of Takenaka et al is not from the same environment as applicants' structure. There is no reason why one skilled in the art would look to the teachings of movable bearings to find how to extend the life of valve sealing surfaces. And even if for some unknown reason one were to look at Takenaka et al, it is found that Takenaka et al do not in any way teach how to extend the life of two surfaces which close with respect to each other as applicants' valve surfaces 7 and 9 close.

Moreover, as pointed out in applicants' disclosure, avoiding wear of the valve surfaces, and thus maintaining constant characteristics for the closing of the injection valve, see paragraphs 3, 4, 5 and 7 of the specification, is critical to obtaining a longer life of the injection valve. This maintains the same injection characteristics for each injection event of the injection valve, a property which is critical in obtaining continued service life and constant injection properties for the injection valve.

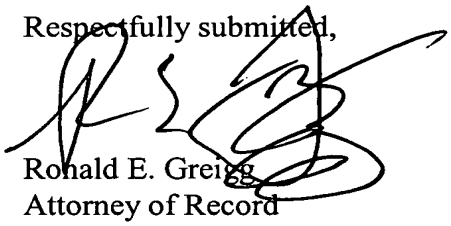
2. The structure of Takenaka et al is directed towards devices which are lubricated with lubricating oil, see col. 7, lines 8-9 and col. 8, lines 46. This point again makes the structure of Takenaka et al entirely different from applicants' fuel injection valve. Applicants' injection valve relies on, and the only lubrication is from, the fuel itself, a liquid which has entirely different properties than does any lubricating oil. There is simply no way that lubricating oil could be maintained in applicant's microscopic indentations. Being part of a fuel injection valve, the fuel would quickly wash any such lubricating oil from the microscopic indentations.

3. The micropores in Takenaka et al are formed differently from the indentations in the application. None of the production methods recited in claim 33 are disclosed by Takenaka et al. Being made by different processes, the micropores in Takenaka et al would thus have structure which is different from the structure of the microscopic indentations generated by the methods recited in applicants' claim 33.

4. In col. 9, lines 4-7, Takenaka et al state that long scratches do not fall within the claimed definition of their micropores. Applicants' use of grooves as one species highlights the difference between the structure, purpose and use of applicants' microscopic indentations in a fuel injection valve and the micropores of Takenaka et al which are used in sliding applications as opposed to applicants' application in which there is no sliding of the needle 5 and its surface 7 with respect to the seat 9.

For all of the above reasons, whether taken singly and in combination with each other, entry of this amendment and allowance of the claims are courteously solicited.

Respectfully submitted,



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